

User manual

**Egg weigher WIN4 / Control  
unit (Softwareversion 6.0.4)**

Code No. 99-97-2197

Edition: 03/2012 GB



## EC Declaration of conformity



# Big Dutchman

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### In accordance with EC Directives:

- **Machines 2006/42/EG, Annex II / Part 1 / Chapter A**

### Further applicable EC directives:

- Electromagnetic compatibility 2004/108/EC
- Low voltage 2006/95/EC



The product mentioned below was developed, constructed and produced in accordance with the above mentioned EC Directives and under sole responsibility of Big Dutchman.

Description:	System for weighing eggs
Type:	Egg weigher WIN4
System no. and year of construction:	see customer order no.

### The following harmonised standards apply:

- EN ISO 12100:2010 Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)
- EN 60204-1:2006/AC:2010: Safety of machinery - Electrical equipment of machines Part 1: General requirements

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Vechta 16.01.2010.

Managing Director

Place

Date

Signer and information regarding signer

Signature



## Overview of changes / updates in the manual

Name of chapter	Type of change / update	No. of BD product information	Revision date	Page
3.4 "Spare parts"	<b>91-00-2561</b> Control relay AT29 incl. WIN4 software  <b>replaces:</b>  <b>91-00-2550</b> Control relay WIN4/ELS4 AT29B2C1 A00 24V with LCD display		<b>09/2009</b>	17
3.2 "Plan of terminal connection"	Terminal connection plan modified		<b>03/2012</b>	16



## WIN4

Egg weigher for small groups in EV / EV-EU Systems

Software Version 6.0.4 (Edition: 28. July 2008)

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## Program version

The product described in this manual is computer-based, and most functions are realised by software. This manual corresponds to:

**Software Version 6.0.4 (Edition: 28. July 2008)**

## Product- and Documentation changes:

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# Product information



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No. 1334    November 2, 2012

## Improvements in the field of bird weighing

### Changeover from WA-2 to WA-22

The WA-2 weighing computer is no longer included in our product range and is completely replaced by WA-22. These two weighing computers only slightly differ in size, design and operation and it is still possible to connect two weighers. WA-22 was improved and amplified by the following points and functions:

- More stable weighing system
- Increased data memory (it is now possible to store an entire broiler batch)
- Shorter weighing time (less than one second)
- CPU-speed doubled
- Less failure-prone
- Better protection at lightning strike



It has to be observed that a printer connection is **not supported** with WA-22. The function to print out reports discontinues without replacement!



*Fig. 1: New WA-22 weighing computer*



The connecting diagram for the wiring of load cells was updated and can be found in the corresponding manual.

With immediate effect, the WA-22 weighing computer is available under the following code number:

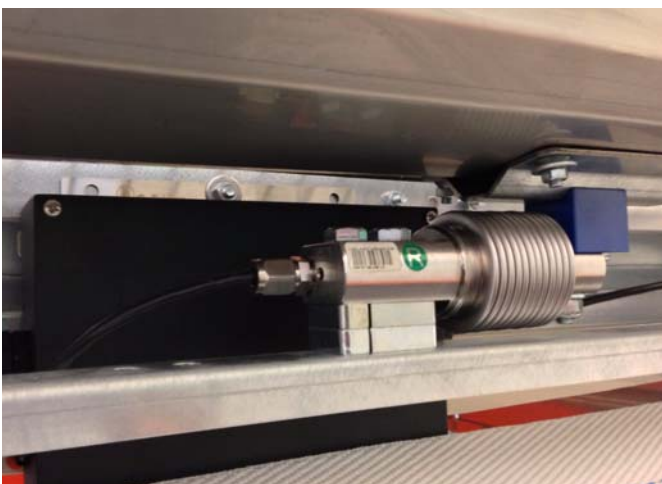
Code-No.	Description
60-45-0041	Weighing computer WA-22

### Load cells type HSX-A and PST

Some load cells for bird weighing which are used together with production computers, were replaced by a new type. The electronic system which converts the measuring signal to a 0-10 V signal was improved and is now more resistant against interferences such as for example lightning strikes. Since the casing is now a little bit larger due to the improved electronics, it now has to be fixed to the ceiling or the like (see fig. 2 and 3). This way, an intensive mechanical load of the cables which would lead to cable breaks is prevented. For the fixation the aluminum bracket on the box has to be used.



*Fig. 2: Swing weigher with converter at the ceiling hook*



*Fig. 3: Egg weigher with converter at the cage*

The new load cells which are already delivered have to be connected as the previous versions.

The following items were replaced:

OLD		NEW	
Code-No.	Description	Code-No.	Description
60-45-0301	Load cell 0.1-30kg 0-10V Type HSX-A-SST	60-45-0302	Load cell 0.1-30kg 0-10V Type HSX-A-SST HQ
60-45-0005	Load cell 10- 30kg Swing-20 0-10V type PST SST	60-45-0013	Load cell 10- 30kg Swing-20 0-10V type PST SST HQ
60-45-0102	Load cell 40-110kg Swing-70 0-10V type PST SST	60-45-0327	Load cell 40-110kg Swing-70 0-10V type PST-SST HQ

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## 1 Summary handling of control unit

The following figure shows the schematic diagram of the control unit for egg weigher WIN4.

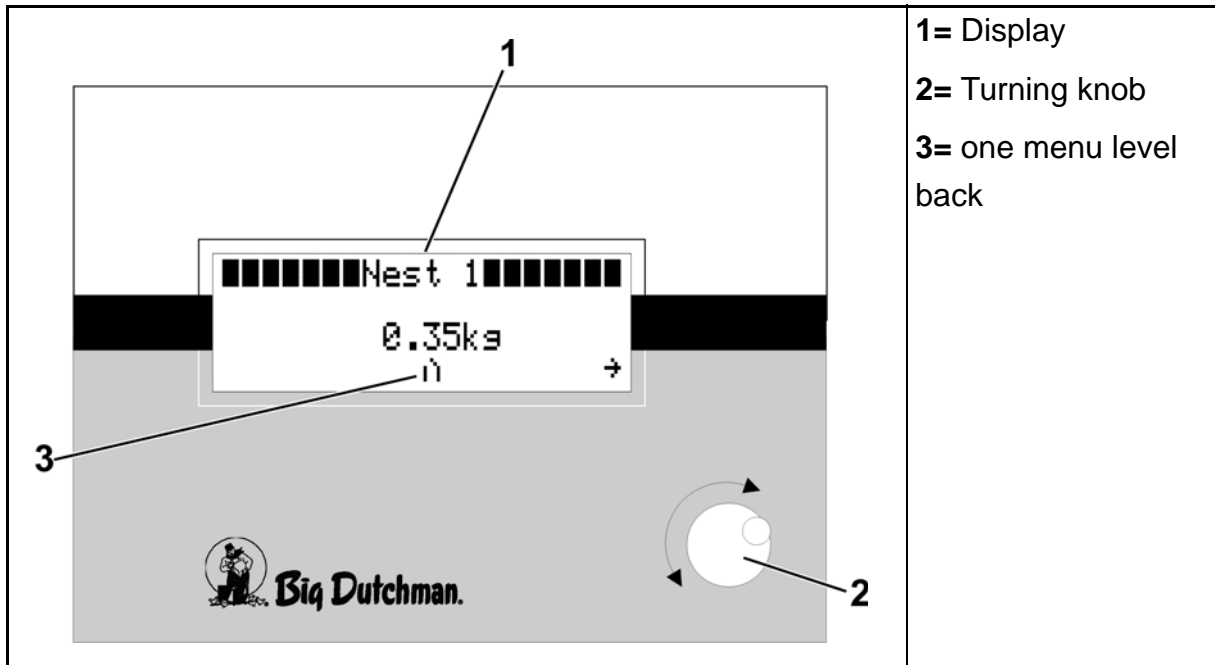


Figure 1-1: Schematic diagram of the control unit for WIN4 egg weigher

By means of the **turning knob** (2) the menu items respectively nominal values shown in the **Display** (1) can be selected (see figure 1-1). Therefore, the cursor (blinking black rectangle) is set at the required menu item respectively nominal value by turning the knob.

After pressing the turning knob you will get into the chosen menu or will have the possibility to change the selected nominal value accordingly, e.g. the maximum target weight for nest 1.

The WIN4 menu is arranged hierarchically (please refer to menu content summary in chapter 3.1).

After choosing a menu item you will reach the next lower menu level.

By means of the **arrows** [ ← → ], in the bottom display line, you can navigate **within the menu level**.

By selecting the symbol [ ↵ ] (see item 3 in figure 1-1) you will get back to **the next higher menu level**.

## 2 Configuration of the WIN4

### 2.1 Starting display

```

N1 : 0.17kg   13:46:27
N2 : 0.03kg
N3 : 0.00kg
N4 : 0.00kg   U6.0 Menu

```

Figure 2-1: Starting display

In figure 2-1 the starting respectively standard display of the WIN4 egg weigher is shown. Next to the current time of day, it shows the software's version number as well as the actual loads on the weighers of nests 1 [N1] to 4 [N4]. After selecting the menu item [Menu] you will reach the main menu of the WIN4.

If there is no entry to the WIN4 for more than 60 sec., the starting display will be switched back on automatically regardless of the previously shown display.

### 2.2 Main menu

```

■■■■■■■■■■Menu■■■■■■■■■■
nominal values
actual values
configuration      ñ

```

Figure 2-2: Main menu

The main menu of the WIN4 offers the possibility to change the [nominal values] quickly. Moreover, the current actual values [actual values] can be displayed and by means of the menu item [configuration] the egg weigher can be adjusted.

Via the symbol [ ñ ] you will get back to the starting display.

## 2.2.1 Nominal values

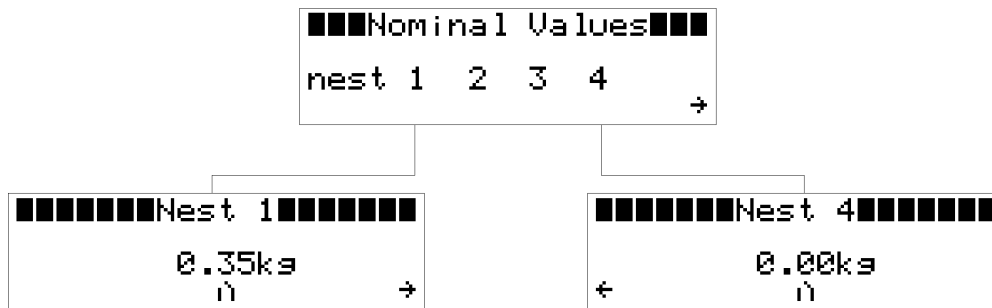


Figure 2-3: Nominal values

In the menu **[nominal values]** those values are set whose exceedance will lead to the egg belt being pulled forward. As you can see in above figure 2-3 the nests 1 to 4 can be selected directly.

The WIN4 allows for nominal values in a range **from 0.00 kg up to a maximum of 10.00 kg**.



**Information:** Experiences of **Big Dutchman** show that with nominal values of **about 0.30 kg** (5 - 6 eggs) an even distribution of the eggs on the egg belt can be achieved.

With a young flock the nominal values can be set higher if necessary as in this case the eggs are smaller and thus need less space on the egg belt.

By selecting the arrow [ → ] in the menu **[nominal values]** you will reach the menu **[Daily Deviation in %]**.

## 2.2.2 Daily Deviation in %

```

    Daily Deviation in %
    Mo    0  Thu    0  Su  100
    Tue   0  Fr     0
    Wed   0  Sa     0      ̣
  
```

Figure 2-4: Daily Deviation in %

In this menu the excess weights to be expected can be set corresponding to the weekday (figure 2-4). If for example egg collection is not carried out on a Sunday, the WIN4 can be allowed to pull the egg belt forward only in excess of a nominal weight deviating by X percent.

With the example shown in figure 2-4 on a sunday, the egg weigher would pull the egg belts forward only at an actual weight that is 100% higher compared to the nominal weight.

**Example:**

**Preset values:**

Nominal value = 0.35 kg and act. daily deviation = 50%

**Calculation:**


Nominal weight x (1 + daily deviation / 100) = weight including daily deviation

$$0.35\text{kg} \quad \times \quad (1 + 50 / 100) \quad = \quad 0.52\text{kg}$$

**Result:**

In this case, the egg belt would only be pulled forward from a weight of 0.52 kg on.

With the WIN4, daily deviations in a range from **0% to a maximum of 100%** can be set.

Via the symbol [  ] you will get back to the main menu.

### 2.2.3 Actual values

```


■■■■■Act. Values■■■■■
act/nom comparison
sum FW-pulls
                                     ↵

```

Figure 2-5: Actual values

This menu refers to a comparison of the present actual values and the nominal values corrected by the daily deviation [**act./nom. comparison**].

Furthermore, via the menu item [**Sum FW pulls**] the number of forward pulls of the egg belt that have been effected up to date can be displayed.

Via the symbol [  ] you will get back to the main menu.



## 2.2.4 Actual / nominal comparison

```

N1 : 0.17kg    0.35kg
N2 : 0.03kg    0.35kg
N3 : 0.00kg    0.00kg
N4 : 0.00kg    0.00kg  n

```

Figure 2-6: Actual / nominal comparison

Figure 2-6 shows the menu **[act/nom comparison]**. Here the present actual values (left column) are compared to the nominal values corrected by the daily deviation (right column) for the individual nests.

Via the symbol **[ n ]** you will get back to the menu **[actual values]**.

## 2.2.5 Sum of forward pulls

```

■■■■Sum FW-Pulls■■■■
      @
    reset      n

```

Figure 2-7: Sum of forward pulls

This menu shows the forward pulls of the egg belt that have been effected up to the present date. The display always refers to the current collecting phase and is set back to zero at the end of egg collection (**[OFF]**-time of the weight sensors: cf. chapter 2.2.9.3).

If the WIN4 is operated in a 24h-mode a reset of the current **[Sum FW pulls]** will only be effected by the input signal of the egg collection.

**In order to reset the number of forward pulls to zero manually, choose [reset].**

Via the symbol **[ n ]** you will get back to the menu **[actual values]**.

## 2.2.6 Configuration

The egg weigher WIN4 is set up according to its usage site by means of the menu [Configuration].

The menu is subdivided into seven chapters that can be reached via three different screen levels (see figure 2-8).

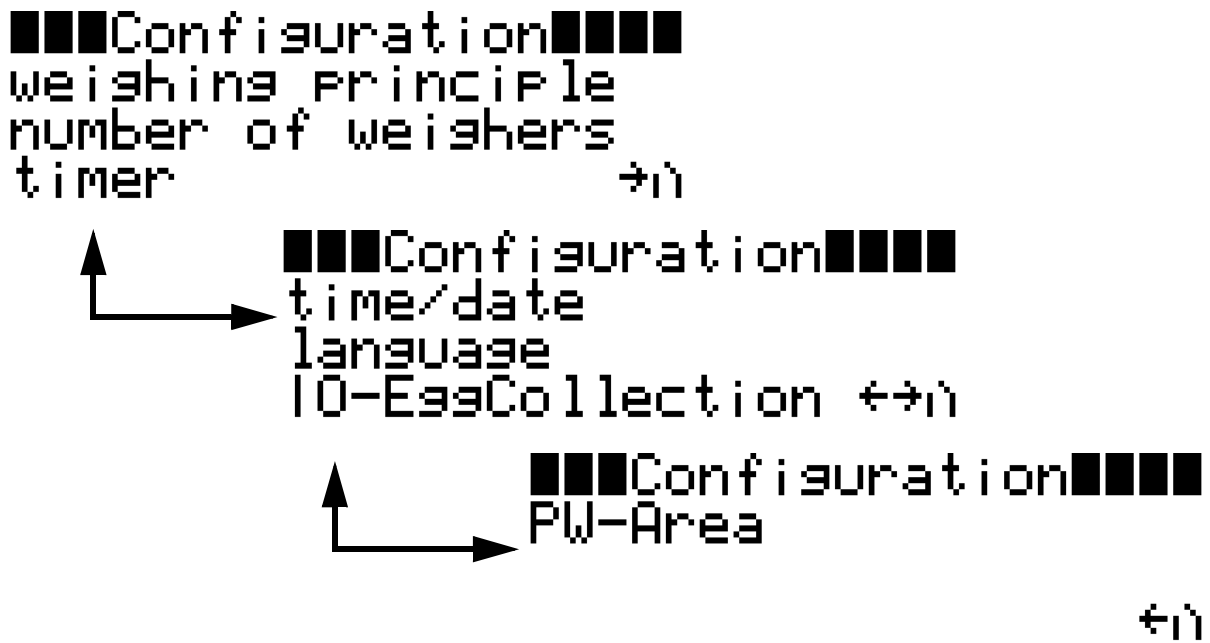


Figure 2-8: Configuration

As described in the previous chapters you can switch back and forth between the three screens by selecting the arrows [ ← → ].

Via the symbol [ ↵ ] you will get back to the main menu in each case.

## 2.2.7 Weighing principle

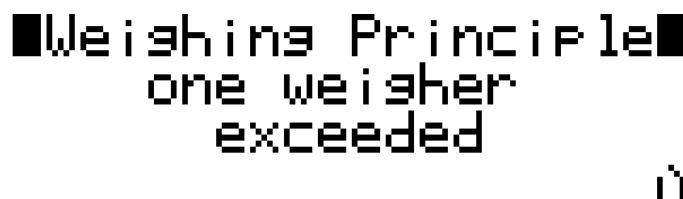



Figure 2-9: Weighing principle

With this menu item the WIN4's reaction on exceedance of nominal values is determined.

**The following weighing principles can be selected:**

- **[one weigher exceeded]**  
Should the nominal value (incl. daily deviation) of one weigher be exceeded for more than 10 sec., the WIN4 will give the signal to pull the egg belt forward.
- **[average exceeded]**  
When the average of all connected weighers exceeds the average of the preset nominal values for more than 10 sec. a signal to pull the egg belt forward is set.
- **[average or weigher exceeded]**  
This principle is a combination of the previously described selection options.

Via the symbol [  ] you will get back to the menu **[Configuration]**.

## 2.2.8 Number of weighers

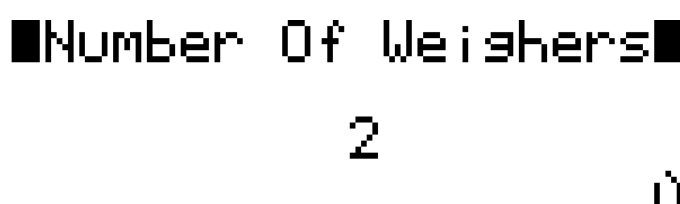


Figure 2-10: Number of weighers

In this menu the number of weighers connected to the egg weigher WIN4 is set. This menu item is only important with the very first configuration.

**Up to 4 weighers** can be connected to the WIN4.

Via the symbol [  ] you will get back to the menu **[Configuration]**.

## 2.2.9 Timer

```

■■■■■■■■Timer■■■■■■■■
Egg-Saver
EggFencer
weight sensor      ñ

```

Figure 2-11: Timer

The menu **[Timer]** enables the user to set cycle times for the **[Egg-Saver]**, the **[Egg fencer]** as well as the **[weight sensor]**. The configuration of the respective timers is described in the following chapters.

Via the symbol **[ | ) ]** you will get back to the menu **[Configuration]**.

### 2.2.9.1 Egg-Saver

```

■Egg-Saver■13:46:27
ON  04:00:00
OFF 18:00:00
state active pulse ñ

```

↑

```

■Egg-Saver Pulse■■■■
ON   40sec.
OFF  600sec.  ñ

```

Figure 2-12: Egg-Saver and Egg-Saver Pulse

In this menu the time is set from when on the Egg-Saver shall be active **[ON]** resp. inactive **[OFF]**. Additionally, the present time of day (top right) and the present state **[active / OFF]** of the egg-savers is shown in the display.

**In order to deactivate the egg-saver permanently, [ON] as well as [OFF] has to be set to 00:00:00!**

For setting the pulse times of the egg-savers, the menu **[Egg-Saver Pulse]** is opened via the menu item **[Pulse]** where the respective pulse times can be adjusted.


Via the symbol **[ | ) ]** you will get back to the menu **[Configuration]**.

#### **[Egg-Saver Pulse]:**

In the menu **[Egg-Saver Pulse]** (see figure 2-12 below) **[ON]** stands for the time interval during which the egg-saver wire is pulled up. This value can be set at 0 up to 120 sec.

**[OFF]** stands for the time interval during which the egg-saver wire is down and the eggs can roll against it. This value can be set at 0 up to 3600 sec.

Via the symbol [  ] you will get back to the menu **[Egg-Saver]**.

	<p><b>Important:</b></p> <p>The egg-saver wire shall provide for the possibility for the <b>newly-laid eggs to dry</b> before they roll onto the egg belt.</p> <p>This interval has to be adjusted by the farm manager in a way that the eggs cannot pile up in the cage.</p>
---	---

	<p><b>Information:</b> Experience of <b>Big Dutchman</b> rendered standard times of 10 min for "Egg-Saver down" and 30 sec. prox. for "Egg-Saver up".</p>
---	---

### 2.2.9.2 Egg fencer


```


■EggFencer■13:46:27
ON 04:00:00
OFF 18:00:00
state active      ñ
  
```

Figure 2-13: Egg fencer

In this menu the time is set from when on the egg fencer shall be active **[ON]** respectively inactive **[OFF]**. Additionally, the present time of day (top right) and the present state **[active / OFF]** of the timer is shown in the display.

**In order to deactivate the egg fencer permanently, [ON] as well as [OFF] has to be set to 00:00:00!**

Via the symbol [  ] you will get back to the menu **[Configuration]**.

	<p><b>Information:</b> The timer <b>[EggFencer]</b> can also be applied for other purposes; e.g for switching light, water, etc.</p>
---	--

### 2.2.9.3 Weight sensor

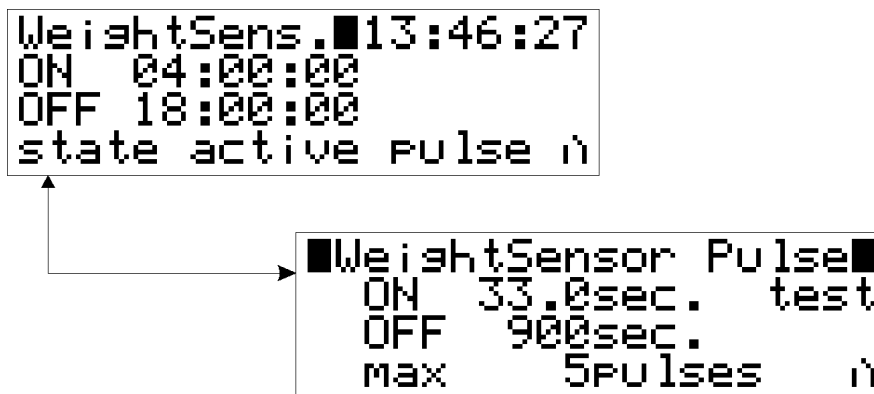


Figure 2-14: Weight sensor and weight sensor pulse

In this menu the time is set from when on the weight sensor respectively weight sensors are active **[ON]** respectively inactive **[OFF]**. Additionally, the present time of day (top right) and the present state **[active / OFF]** of the weight sensors is shown in the display.

**In order to deactivate the weight sensors permanently, [ON] as well as [OFF] has to be set to 00:00:00!**

For setting the pulse times of the weight sensors, the menu **[WeightSensor Pulse]** is opened via the menu item **[Pulse]** where the respective pulse times can be adjusted.

Via the symbol **[ ]** you will get back to the menu **[Configuration]**.

#### **[Weight Sensor Pulse]:**

In the menu **[Weight Sensor Pulse]** (see figure 2-14 below), **[ON]** stands for the period of time in which the egg belt shall be pulled forward. The period to be set has to be determined in several trial runs. The egg belt should be pulled forward by a distance that is **twice as long as a nest's width**. The value **[ON]** can be set at **0 to 120 sec.**



**Information:** Another possibility next to the pulling forward by twice a nest's width is pulling the egg belt forward in lengths of about 20 cm. With this procedure eggs from different laying times are mixed. With pulling the egg belt forward by twice a nest's width, experience of **Big Dutchman** rendered values in a range of about **20 - 35 sec.**


**[OFF]** stands for the period of time in which, despite a possible "Full"-signal from the weight sensors, no forward pull of the egg belt will be performed. This means, when the egg belt has been pulled forward, the set time is guaranteed as a "compulsory break". This value can be set at **0 to 3600 sec.**


In order to avoid a pile-up of eggs in front of the elevator or cross belt, the maximum number of forward pulls has to be limited.

The number of forward pulls depends on the distance between the first nest and the elevator respectively cross belt. The value can be set at **1 to 9 pulses**.

By selecting the menu item **[test]** the egg belt is pulled forward for the period of time set in **[ON]**. Using a second group of longitudinal belts (bridge circuit between X3 1-2 / see connection diagram in appendix), it will be started with the same parameters 30 sec after the first group of longitudinal belts has stopped.

Via the symbol [ | ) ] you will get back to the menu **[Weight sensor]**.

	<p><b>Important:</b></p> <p>If a frequency transformer is connected, it has to be made sure that the frequency is not changed. If the frequency at the drive changes, also the running time of the egg belt will change automatically.</p>
---	--

	<p><b>BD-TIP:</b></p> <p>Often there is the possibility <b>to start the frequency transformers at a constant frequency (e.g. 50 Hz) via an additional terminal</b>.</p> <p>This option can also be applied when the frequency for the normal egg collection is set at a different value at the frequency transformer via the potentiometer.</p> <p><b>Your electrician will give you further information on this function.</b></p>
---	--

### 2.2.10 Time/Date

```

■■■■■Time/Date■■■■■
time      13:46:27
date      06.05.08
day       Tue           ñ

```

Figure 2-15: Time/Date

In the menu **[Time/Date]** the present **[Time]**, the **[Date]** and the corresponding weekday **[Day]** can be adjusted.

Via the symbol [ | ) ] you will get back to the menu **[Configuration]**.

## 2.2.11 Language

```

■■■■■■■■Language■■■■■■■■
          Plattdeutsch
                                     ñ

```

Figure 2-16: Language

In the menu **[Language]** the language of the menus can be altered.

**The following menu languages can be selected:**

- English
- German
- French
- Dutch
- Spanish
- Polish
- Swedish
- Lower german

Via the symbol [ ñ ] you will get back to the menu **[Configuration]**.

## 2.2.12 IO-Egg Collection

```

■■ IO-EggCollection■■
      delay 120min.
reset for 2Pulse
Egg-Saver ON ñ


```

Figure 2-17: IO-Egg Collection

Additionally, the egg weigher WIN4 provides for the possibility to start the egg collection independently from the set time frame (see chapter 2.2.9.3).




When the WIN4 gets the signal that the egg collection has been started, the egg weigher is switched to the "**standby-mode**". This means that the weight sensor is deactivated during this time. Thus, no signal to pull the longitudinal belts forward is set. After the egg collection has stopped, the WIN4 remains in the standby mode for the set delay. The **[delay]** can be set at **1 to 999 min.**



**Information:** The value should be selected in a way that also with a short-term switch-off of the cross belts, the egg weigher cannot give the signal to pull the longitudinal belts forward too early.

After the delay time has elapsed, a **[reset for X Pulses]** is effected according to the actual number of forward pulls carried out previously (see chapter 2.2.5). This value can be set at **0 up to the maximum number of forward pulls.** If the **[Egg-Saver]** shall also be deactivated during egg collection as well as the following delay time, it can be switched off via the menu **[IO-EggCollection] [OFF]** or it can continue to operate normally **[ON]**.

Via the symbol **[ | \ ]** you will get back to the menu **[Configuration]**.



**Information:** When the egg collection has been activated, this is shown by a blinking notice in the display of the WIN4. After the egg collection has been switched off, the remaining standby time is shown at the top right of the control unit's display.

### 2.2.13 PW-area

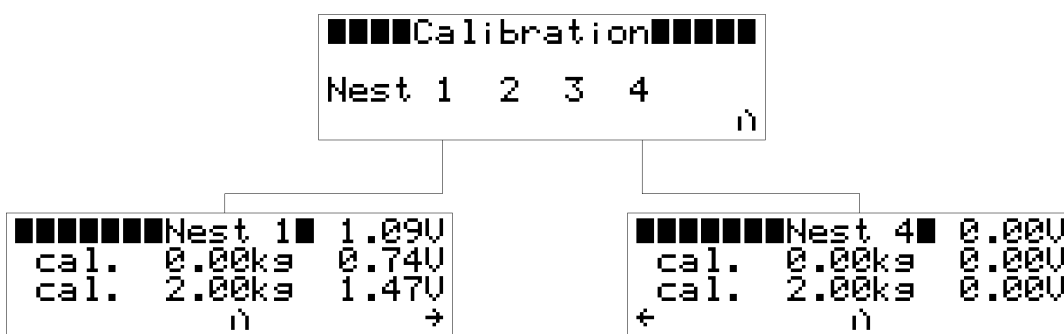


Figure 2-18: Calibration (effected for nest 1 / not effected for nest 4)

After entering the password \_\_\_\_\_ you will get to the menu **[Calibration]**. There the nests can be selected individually for adjustment.

Has the weight sensor of the selected nest been connected to the WIN4 correctly, a slightly unsteady voltage is displayed in Volt (V) at the top right of the calibration menu (see example in figure 2-18 bottom left: 1.09V).

As a first step the unladen / empty weigher is calibrated. Therefore it is to be made sure that there are no objects - neither any eggs - on the scale pan. Next, select **[Cal.]** in the display's second line with the cursor and press the turning knob. The voltage displayed in the first line will thus be shown at the end of the second line.

As a second step, the weigher is calibrated laden with a test / calibration weight. For this purpose, the scale pan of the weigher to be calibrated is laden with a known weight. This known weight is entered as calibration weight in the second line of the nest's calibration menu (see figure 2-18 bottom left: 2.00kg).

Finally, select in the display's third line with the cursor and press the turning knob. The voltage displayed in the first line will thus be shown at the end of the third line.

The egg weigher WIN4 is calibrated now.



**Important:**

In order to get as exact measurements as possible, a sufficiently heavy test weight should be put on the scale pan for calibration; about 5 - 10 kg.



### 3.2 Plan of terminal connection

	Terminal	Description	Objective
<b>Terminal strip -X1 / power supply</b>			
1	1	L	
2	2	N	
PE	PE	Protective conductor	
<b>Terminal block -X2 / connection of weight sensors</b>			
1	1	+ 24 V DC	- red conductor sensor 1
2	2	0 - 10 V	- green conductor sensor 1
3	3	- 0 V DC	- black conductor sensor 1
PE	PE	Protective conductor	
4	4	+ 24 V DC	- red conductor sensor 2
5	5	0 - 10 V	- green conductor sensor 2
6	6	- 0 V DC	- black conductor sensor 2
PE	PE	Protective conductor	
7	7	+ 24 V DC	- red conductor sensor 3
8	8	0 - 10 V	- green conductor sensor 3
9	9	- 0 V DC	- black conductor sensor 3
PE	PE	Protective conductor	
10	10	+ 24 V DC	- red conductor sensor 4
11	11	0 - 10 V	- green conductor sensor 4
12	12	- 0 V DC	- black conductor sensor 4
PE	PE	Protective conductor	
<b>Terminal strip -X3 / Digital inputs for extra functions</b>			
1	1	Second group of longitudinal belts (option)	
2	2		
PE	PE	Protective conductor	
3	3	Standby-mode egg collection (option)	
4	4		
PE	PE	Protective conductor	
<b>Terminal strip -X4 / Outlets Attention: Observe the switching capacity of the relays!</b>			
1	1	Egg-Saver (for information about the switching capacity see the table on the following page)	
2	2		
PE	PE	Protective conductor	
3	3	Egg fencing system (Egg-Fencer) (for information regarding the switching capacity see the table on the following page)	
4	4		
PE	PE	Protective conductor	
5	5	Enabling of longitudinal belts (for information regarding the switching capacity see the table on the following page)	
6	6		
PE	PE	Protective conductor	
7	7	Second group of longitudinal belts (option; bridge -X3 1-2) (for information regarding the switching capacity please see the table on the following page)	
8	8		
PE	PE	Protective conductor	

<b>Switching capacity of the relays</b>		
Number of contacts		4 changeover contacts
Max. constant current / max. current at make	<b>A</b>	5 / 10
Nominal voltage / max. switching voltage	<b>V AC</b>	250 / 250
Max. switching capacity AC1	<b>VA</b>	1.250
Max. switching capacity AC15 (230 VAC)	<b>VA</b>	250
1-phase motor load, AC3 - operation (230 VAC)	<b>kW</b>	0.125
Max. switching current DC1: 30/110/220V	<b>A</b>	5 / 0.25 / 0.12
Min. switching load	<b>mW (V/mA)</b>	300 (5 / 5)

### 3.3 Parts lists

<b>Code number</b>	<b>Description</b>
60-45-0400	Control-box for egg weigher WIN 4
60-45-0410	Weighing channel for nest EV-EU-L 0-10V
60-45-0420	Weighing channel for nest KV-D 0-10V

### 3.4 Spare parts

<b>Code number</b>	<b>Description</b>
00-00-1285	Sticker: WIN 4 vers. 1 AT29
60-43-5887	Housing MC135 cpl for WIN4/ELS4
91-00-2561	Control relay AT29 incl. WIN4 software